

Appl. No. 10/613,563
Amdt. dated August 9, 2005
Reply to Office action of May 9, 2005

REMARKS

Reconsideration is respectfully requested. Claims 1-15 are present in the application. Claims 1, 10, and 12 are amended herein.

Claims 1-15 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner asked that the word "acts" be changed to --steps--. Applicants have made this change by amendment of claims 1 and 10.

Claims 1, 3, 5, 7-10, 12 and 14 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Fischbein et al (U.S. 5,360,465). Applicants respectfully traverse.

Fischbein et al discloses "Particulate Fertilizer Dust Control". The objective of this patent is to provide a method for reducing fugitive dust emission from granular, inorganic fertilizers (col. 2, lines 6-8), that comprises applying a dust reducing amount of an aqueous solution containing a **mixture of urea and lignosulfonate** to said granular inorganic fertilizers (col. 2, lines 8-11). However, the present application relates to a method for making controlled-release ammonium phosphate fertilizer, that comprises the steps of:

- adding release-controlling materials to ammonium phosphate slurry;

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- mixing evenly the ammonium phosphate slurry and the release-controlling materials into a mixture;
- condensing the mixture of the ammonium phosphate slurry and the release-controlling materials until the water-content content of the mixture reaches 25-35% (w/w, based on the dry weight of the ammonium phosphate slurry); and
- granulating the condensed mixture of the ammonium phosphate slurry and the release-controlling materials to obtain granular controlled-release ammonium phosphate fertilizer.

Clearly, the present application differs from Fischbein et al in the following aspects:

- The raw materials are different. The raw materials in the present application comprise release-controlling materials (including lignosulfonate) and ammonium phosphate slurry. However, the raw materials in Fischbein et al comprise urea, lignosulfonate and phosphate.
- The steps are different. The steps according to the present application comprise mixing, condensing and granulating. However, the steps in Fischbein et al comprise applying a dust reducing amount of an aqueous solution to the granular inorganic fertilizer. Thus, their steps are different.
- The objective is different. The objective of the present application is to provide methods for making controlled-release ammonium phosphate fertilizer. However, the objective of

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Fischbein et al is to provide a method for reducing dust emissions from granular inorganic fertilizers.

Accordingly, it is submitted that Fischbein et al do not anticipate claims 1, 3, 5, 7-10, 12 and 14.

Claims 1, 3, 5, 7-10, 12 and 14 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Detroit (U.S. 4, 846,871 or 5,041,153). Applicants respectfully traverse.

Detroit discloses "Lignosulfonate Treated Fertilizer Particles". This patent relates to a composition consisting essentially of ... ammonium phosphate..., and from 0.2% to 5.0% by weight of a lignosulfonate. However, the controlled-release ammonium phosphate fertilizer according to the present application consists essentially of release-controlling materials (3-35% w/w, claim 6) and ammonium phosphate. Additionally, the key point of the controlled-release ammonium phosphate fertilizer according to the present application resides in the water-content rate being 25-35%. Detroit (U.S. patent No. 4,846,871) does not disclose this characteristic. Furthermore, the objective of this patent is to provide **anticaking and anti-dusting properties** to the fertilizer particles, which are different from that of the present application.

Regarding Detroit (U.S. Patent No. 5,041,153), this patent relates to " Lignosulfonate Treated Fertilizer Particles". In a

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manner similar to Detroit U.S. patent No. 4,846,871, this patent is also different from the present application.

Accordingly, it is submitted that neither Detroit document anticipates the claims.

Claims 10, 12 and 14 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Buchholz et al (U.S. 5,360,465). Applicants respectfully traverse.

Buchholz et al disclose a solution of lignosulfonate up to 5wt% sprayed onto very fine particles of ammonium phosphate. Thus, that the lignosulfonate is sprayed on the surface of the particles of ammonium phosphate is apparent. However, according to the method of the present application, the ammonium phosphate slurry is evenly mixed with the release-controlling materials. Thus the present application is different from Buchholz et al, and is not taught or suggested.

Claims 1, 3, 10 and 12 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over CN 1162350. Applicants respectfully traverse.

CN-1163250 discloses a natural zeolite that is crushed, palletized and compounded with ammonium phosphate into zeolite ammonium phosphate, then is mixed with synergist in 10-40%. The objectives of CN-1163250 are to raise the utilization of phosphorus by 5-10% and nitrogen by 10-20%. The objective of zeolite according to CN-1163250 is to absorb the ammonium phosphate (physical reaction), not the chemical reaction of the

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zeolite with ammonium phosphate as disclosed in the present application. Additionally, the objective of the present application is to provide a method for making controlled-release ammonium phosphate fertilizer, that is totally different from that of CN-1163250 (raising the utilization of phosphorus by 5-10%, and nitrogen by 10-20%). Thus, the present application is different from CN-1163250, and claims 1, 3, 10 and 12 are not taught or suggested..

Claims 1-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Rohwer (U.S. 2004/0099027) in view of Young (U.S. 3,354,096), RU 2165912 and Berry et al (U.S. 4,695,387). Applicants respectfully traverse.

Rohwer discloses a "Manufacturing Method for Zeolite-Containing Fertilizer." Paragraph 0009 of Rohwer discloses that ... the zeolite component and the calcium carbonate component are mixed in roughly 2:1 weight ratio (zeolite to calcium carbonate). ... After drying the mixed slurry, these fertilizer precursor particles Paragraph 10 of Rohwer further discloses when the precursor particles are applied to the field, they may be charged to become active, slow-release fertilizer by the addition of commercial agricultural fertilizers. The fertilizer according to Rohwer consists of two parts. One is the precursor particle, and the other is commercial agricultural fertilizer. After the precursor particle is applied to the field, the fertilizer is then applied. However, based on the present application, the

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release-controlling material (zeolite) and the ammonium phosphate are applied to the field simultaneously. This publication also discloses that (paragraph 0021) in the slurry/mix step, commercial ammonium phosphate solution may be added at about 10 weight % of zeolite to be charged. However, the reaction of being charged is concerned with physical reaction, not the binding activation as disclosed in the present application.

Young, U.S. patent No 3,354,096, relates to "Pelleted Zeolite Compositions Possessing Improved Crushing Strength," not to a fertilizer, thus, it is totally different from the present application. Col. 4, lines 30-35 of the Young patent explains that effective phosphate bonding is obtained under either acidic or basic conditions, ... This is concerned with the catalytic effectiveness of the zeolites of the molecular sieve, not with the controlled release of ammonium phosphate as disclosed in the present application. Col. 3, lines 57-65 of Young states that the zeolite may be slurried or mulled in an aqueous alumina suspension or paste, to proportion of mono- or dihydrogen ammonium phosphate or phosphoric acid. The resulting wet mixture is later dried, pelleted and calcined to decompose the ammonium ions in the alumina-phosphate mixture as leaving Al-O-P and/or Si-O-P bonding linkages. Therefore, that Young is concerned with a zeolite catalyst that is different from the present application is apparent.

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RU 2165912 is directed to a "Method of Preparing Granular Nitrogen Phosphate Fertilizer." That is, it is concerned with a granular fertilizer, not to a controlled release ammonium phosphate fertilizer as disclosed in the present application. The objective of using zeolite in this RU patent is to obtain a better granulation effect, not to provide a controlled-release effect as disclosed in the present application. Therefore, this RU patent is different from the present application. Additionally, the purpose of this patent is to provide a more efficient method of preparing granular nitrogen phosphate fertilizer by feeding pulp into zeolite granulation and product drying apparatus. According to the present application, zeolite is processed by evenly mixing and grinding to activate ammonium phosphate fertilizer. The activation according to the present application is a chemical reaction, not a physical action of granulation of this patent.

Berry et al, US patent No. 4,695,387, is concerned with "Removal of Ammonia from Wastewater." Col. 3, lines 48-50 of Berry et al teaches an ideal range of operation for the zeolite adsorbent. The adjusting of pH between 4 and 6 is to make the zeolite adsorb ammonia more efficiently, not adsorbing ammonium phosphate. That is, this patent is not concerned with the mixing of zeolite (controlled-release materials) and ammonium phosphate, thus, it is different from the present application.

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Given the noted differences above with Rohwer, Young, the RU patent and Berry et al, the combination of the documents would not product applicants' claimed invention.

It is therefore respectfully submitted that claims 1-15 are not taught or suggested by the documents, whether considered alone or when combined.

In light of the above noted amendments and remarks, this application is believed in condition for allowance and notice thereof is respectfully solicited. The Examiner is asked to contact applicant's attorney at 503-224-0115 if there are any questions.

Respectfully submitted,



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